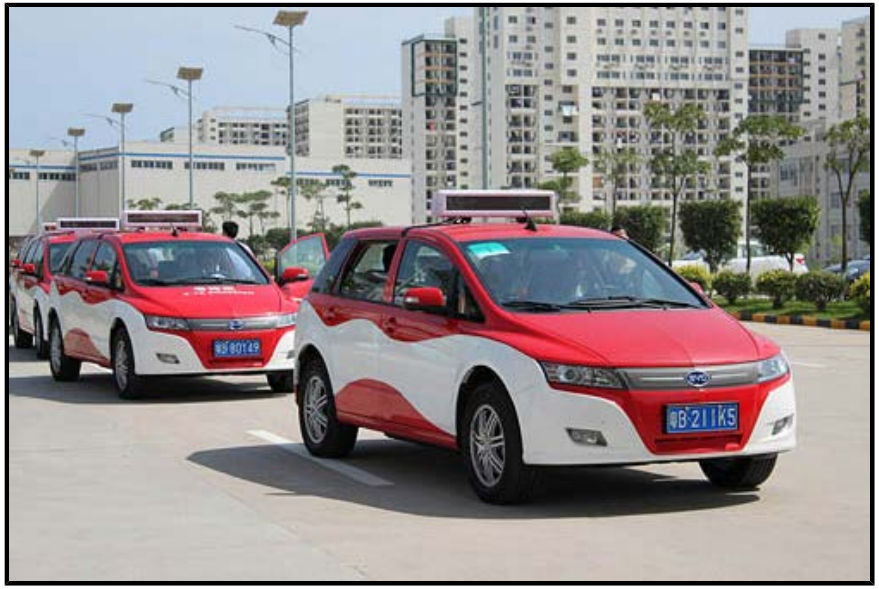
# JULY 2011



BYD's all-electric taxi fleet in Shenzhen, China. more...

AROUND THE INDUSTRY

## International Battery Provides Solution to GREENS

International Battery of Allentown, Pennsylvania, has teamed with HDT Global (HDT) to supply energy storage systems for the U.S. Marine's Ground Renewable Expeditionary Energy Network System (GREENS). A production run is currently under way after a nine-month development phase.

The GREENS power system consists of networkable and scalable 1600W solar arrays and rechargeable large-format Lithium-ion (Li-ion) batteries that provide continuous electricity for Marines in remote locations. International Battery's 60Ah cells and Battery Management System (BMS) are the building blocks for the 24V, 1.5kWh system which HDT integrates into a ruggedized enclosure. The system provides AC and DC power to charge communication, targeting and computing devices while interfacing with existing diesel generators. It can be transported on a Humvee and quickly assembled.

The Li-ion enables high efficiency storage of solar energy in a package substantially lighter than a lead-acid battery. It also has 8-10 times the cycle

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life of lead-acid batteries, exhibits dramatically improved durability in high ambient temperatures and allows for nearly 100% use of the nameplate battery capacity. International Battery's large-format prismatic cells contain 5-10 times more energy than other prismatic cells and 70 times more energy than consumer-oriented cylindrical cells.

## Non-Heating Li-ion Batteries in the Works

Fremont, California-based Leyden Energy is currently working on developing a new type of chemistry for Li-ion batteries that may facilitate batteries that do not overheat like traditional ones do, leading to new applications.

One prospect is the use of Li-ion batteries in electric vehicles. Generally, in hybrid and electric cars, high-density batteries come with safety risks, mostly caused by the fact that they overheat. But the Leyden team developed a new version of the Li-ion battery, which can store more power than usual and also function efficiently at high temperatures.

To do so, the company used a graphite current collector while inserting sodium imide inside the battery's electrolyte. These materials allow the power storage unit to last longer and withstand higher operations temperatures.

The company is not revealing how its engineers managed to achieve higher energy densities of up to 225Wh/kg. This level of efficiency is about 50% higher than that achieved by existing electric vehicle batteries.

## Jackson Becomes JCI Executive Vice President


Jackson

Bill Jackson has joined Johnson Controls as executive vice president of operations and innovation, a new position. He will be based in the company's global headquarters in Glendale, Wisconsin, and will report to Johnson Controls' chairman and CEO Stephen A. Roell.

Jackson brings more than two decades of automotive and industrial consulting experience to Johnson Controls, having served as a senior partner with Booz & Co., where he led the firm's global automotive, transportation and industrials practice. Over that time, he worked closely with all three of Johnson Controls' businesses on a variety of strategic and operational matters.

Most recently, Jackson served as senior vice president and president-automotive at Sears Holding Corp., where he has been responsible for the leadership and strategic growth of its automotive business. He holds bachelor's and master's degrees in mechanical engineering from the University of Illinois at Urbana-Champaign and a Master of Business Admini- stration degree from the University of Chicago.

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**Department of Energy awards up to $120 million for battery hub to Argonne-led group**
US DoE

## Inspec Plans Solar-Battery Powered Building

SANYO North America Corp. and InSpec Group are planning a new 679kW solar system to be designed and installed by InSpec for the Oregon Sustainability Center in Portland, Oregon.

The project also includes a 30kWh large-scale Li-ion battery storage system, which will be connected in line with the rooftop PV system, capable of supplying DC electricity for applications such as LED lighting.

Portland-based InSpec will be managing the solar and smart energy system design and installation for the building, which is expected to be completed by the beginning of 2013, and will employ SANYO solar modules and batteries.

The photovoltaic system will use SANYO's world-leading conversion efficiency solar modules and its newly developed Smart Energy System featuring large-scale Li-ion rechargeable batteries. This marks the first time that SANYO's large-scale Li-ion storage system will be installed in a new commercial building in combination with SANYO solar panels in the U.S.

## EVI Will Use Grant to Expand Manufacturing



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Stockton, California-based Electric Vehicles International (EVI) plans to use a $3.9 million grant from the California Energy Commission to expand and modernize its primary U.S. manufacturing facility. The EV modernization grant will provide funding to develop a manufacturing line that will lower production costs, ultimately leading to more EVs on the roads nationwide.

“Through A.B. 118, the California Energy Commission is funding this grant to EVI, creating 50 new living-wage clean energy jobs,” says Jim Boyd with the California Energy Commission. "This grant is intended to help EVI modernize and transform the medium and heavy-duty electric vehicle manufacturing industry, making clean, electric vehicles more accessible and affordable, and facilitating a widespread transition from diesel engines to zero-emission vehicles to meet California’s economic and environmental goals."

## Ballard Provides Backup Power for German City

Ballard Power Systems of Vancouver, Canada reports that its FCgen®-1020ACS fuel cell stack is the power source for a 10kW backup power system deployed by Heliocentris Energy Solutions AG, specialist in environmentally-friendly energy storage solutions. A total of eight 1.2kW Heliocentris Nexa 1200 fuel cell systems using Ballard stacks provide extended duration backup power to critical information technology services at the City Council headquarters in Meiningen, Germany.

The direct hydrogen system is hybridized together with Li-ion batteries and deployed for indoor use. This replaces an uninterruptible power supply system using lead-acid batteries, which has proven insufficient for long power outages.

The trial in Meiningen is being supported by the German Federal Ministry of Transport, Building and Urban Development as part of the National Hydrogen and Fuel Cell Technology Innovation Program (NIP). Now GmbH National Organization for Hydrogen and Fuel Cell Technology is in charge of coordinating the NIP.

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ELECTRIC VEHICLES

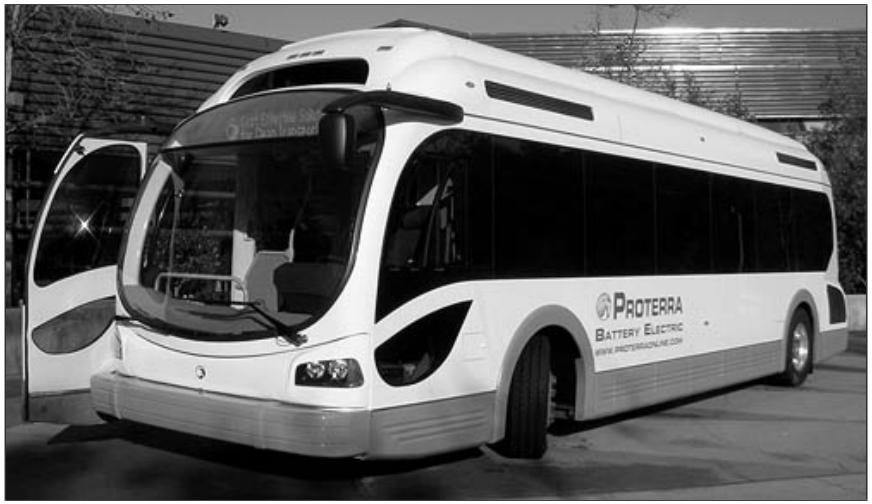
## Chinese EV Taxi Fleet Performing Well

BYD, Chinese rechargeable battery manufacturer turned automaker, is celebrating the one-year anniversary of its all-electric taxi fleet, largest in the world, by announcing performance results of its three pilot models.

Although the company highlighted two of its bus fleets, one called the F3DM undergoing testing in Los Angeles and another in Shenzhen expecting to add 300 more of the eBus-12 models, BYD's all-electric taxi service cars seemed to be the best performers.

The taxi fleet in Shenzhen started as a 50-car organization, made up of e6 models which have a range of 160 miles and a top speed of 88mph, but will grow to a fleet of 300 before August of this year. So far the automaker says it has seen no noticeable drop in energy performance in the car's ion-phosphate battery, making the vehicle all the more impressive.

## GM Invests in Battery Electric Bus Company




General Motors Ventures LLC will invest $6 million in Proterra Inc. as part of an investment group that will provide a total of $30 million to the bus manufacturer.

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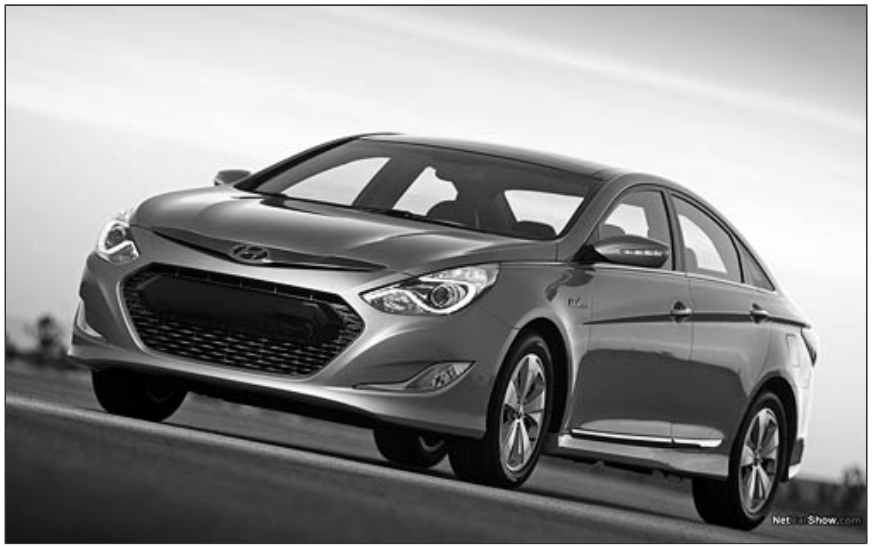
Proterra's EcoRide™ BE-35 battery electric bus is averaging up to 24mpg (diesel equivalent) in service, a more than 600% improvement over a typical diesel bus. Using technology developed by Proterra, the lightweight, composite-body bus recharges in about 10 minutes.

Proterra is currently manufacturing buses in a temporary plant in Greenville, South Carolina, near the Clemson University International Center for Automotive Research. Proterra's TerraVolt™ energy storage system consists of 54-72kWh lithium titanate battery packs that recharge in 10 minutes using the company's roof-mounted Fast Fill™ recharging system.

## Hyundai Plug-In Hybrid To Debut In 2013



Hyundai Motor aims to sell 11,000 of its Sonata Hybrids, in South Korea this year, as rising gasoline prices stoke demand for fuel-sipping cars. It launched the hybrid version of the popular mid-sized Sonata sedan in South Korea in May and in the the U.S. market in January.

Hyundai will also roll out a plug-in hybrid to challenge Toyota's Prius in 2013, a company official said. "We plan to launch a plug-in hybrid model which is in the same segment as the Prius in 2013," the official told Reuters on condition of anonymity, as he was not authorized to talk to the media.

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# U. S. BATTERY AND FUEL CELL PATENTS

Compiled by Eddie T. Seo
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